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Connecting. Converting. Leading !

Document:

USER MANUAL for GW IoTG1M/G8M

Applicable for version after 1.20.000

V5.0 (16/01/2025)

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INTRODUCTION

GW IoT is used for remote monitoring of modbus devices via cellular network. It acts as a modbus master to multiple modbus slave field devices at a single location and provides reliable data connection to a web based application server. Unit is designed to be used in industrial panels and operates on 18V-36V DC, 1A power supply.

FEATURES

- Modbus RTU Master interface for field devices
- Connects by itself to external web server.
- Self-embedded with integral PPP, TCP/IP and HTTP protocol stack.
- RTC support (battery backed).
- Robust design with DIN rail mounting and wall mounting enclosure.
- Industrial Power Terminal block for 18V ~ 36V DC operation.
- One console port (Mini USB) for local configuration.
- 8 MB memory for data storage if Network drops

MODELS

- GW IoTG1M (2G Model)
- GW IoTG8M (4G Model)

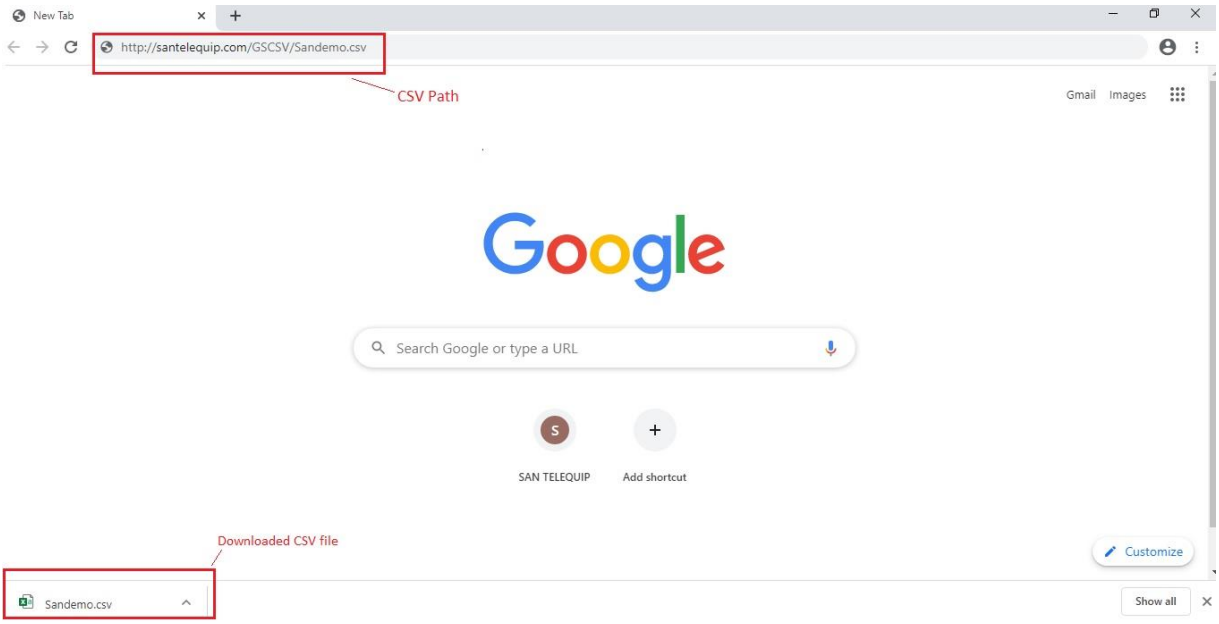
Cloud server protocol can be HTTP GET, HTTP POST, MQTT and FTP.

INSERTING/REMOVING THE SIM CARD-

To insert or remove the SIM Card, it is necessary to press the yellow SIM holder ejector button with Sharp edged object like a pen or a needle. When this is done the SIM holder comes out a little, then pull it out and insert or remove the SIM Card. It is very important that the SIM is placed in the right direction for proper working.

OPERATION

GW IoT is first configured with APN name of service provider of the SIM through USB console port. At power on, GW IoT connects to internet using cellular network. After successful internet connection, it reads the configuration CSV file which is stored on FTP server. The FTP path for the CSV file is configured through USB port console. Gateway reads file from server using HTTP GET request. So FTP server folder should be enabled to read files using HTTP GET protocol. This can be tested by putting the path in any standard web browser like IE, Chrome or Firefox.



This file contains configuration parameters like upload interval in minutes, user name and password of webserver, baud rate parameters, webserver URL, and modbus mapping.

After configuration, unit starts uploading modbus parameters at specified periodic interval. If network fails data will be stored into the memory of unit and it will be uploaded in FIFO manner when network is restored.

If internet connection is disconnected, unit will attempt for connection after redial interval. If internet link is disconnected due to poor network signal strength, unit will attempt for connection once network signal strength restores.

During initialization once internet is connected and if unit is not able to read CSV from server then unit will try for reading CSV for 5 minutes and if it unable to read then it will start operation as per previously stored CSV in the unit.

Device offline and retry logic.
If multiple devices are connected to gateway and if any one of the devices is not communicating then data frames will not be sent for the device which is not communicating.
In case of device offline, gateway will poll all queries for particular device for retries configured in the CSV. If any one query for particular device is not responding, then that device will be marked offline.

Data frame format:
In case of HTTP and MQTT protocols, JSON and Non JSON format can be configured. Please refer data format document.

CONFIGURATION DETAILS

Configuration parameters supported through USB console

1) Network threshold, IP, APN name, baud rate

2) IoT protocol can be HTTP GET, HTTP POST, MQTT or FTP. It is set in the gateway before dispatch to site. For uploading data to the server following parameters need to be set using USB console.

- HTTP GET
  - For HTTP GET protocol, CSV URL Path and CSV name need to configured through console port.

- HTTP POST
  - For HTTP POST protocol, CSV URL Path and CSV name need to configure through console port.

- MQTT
  - For MQTT protocol, CSV URL Path and CSV name need to configure through console port.
  - Following MQTT settings need to be configured in the gateway to connect the server.
  - MQTT server, MQTT server port, client identifier, user name and password, Publish topic, subscribe topic, keep alive timer.

  - Note: If username and password are not provided, then it can be left blank.
    If client identifier is not provided from MQTT server, then any client identifier can be configured (Max 24 characters). It should not be left blank. If multiple gateways are connected to server, then this client ID should be unique for each gateway.

- FTP
  - For FTP protocol, CSV URL Path and CSV name need to configure through console port.
  - FTP server settings: FTP server, FTP port, user name, password and IO CSV name.

- ASCII data to cloud server
  Gateway can be configured to accept data in ASCII format and send the data to cloud using HTTP, MQTT and FTP. This can be enabled at the time of factory settings.
  If ASCII serial protocol data to be uploaded then CSV URL Path and name menu will change to webserver URL and upload interval as modbus configuration mapping will not be required.

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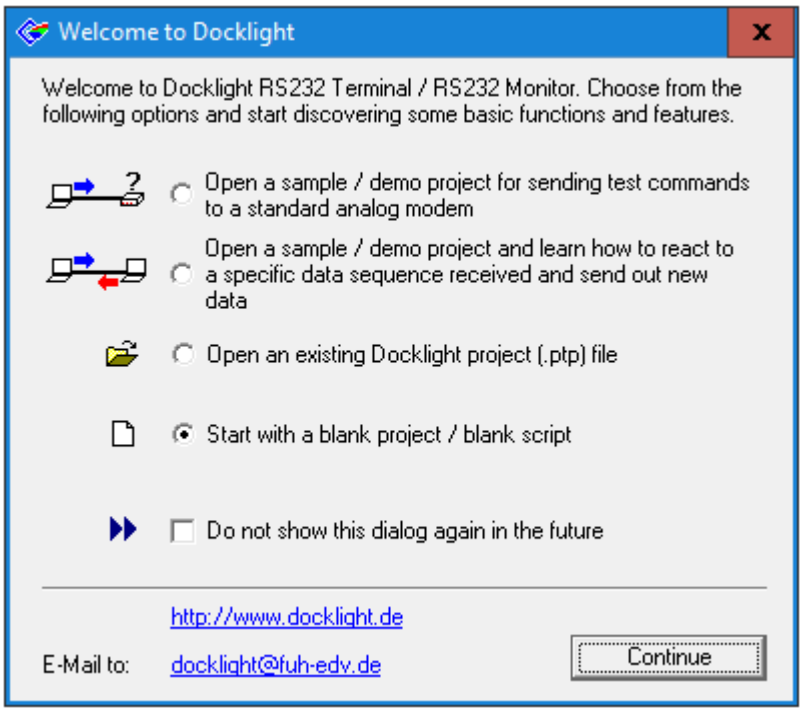
CONFIGURATION OF PARAMTERS THROUGH USB CONSOLE

a) Connect mini USB connector to USB port of PCB using USB cable.

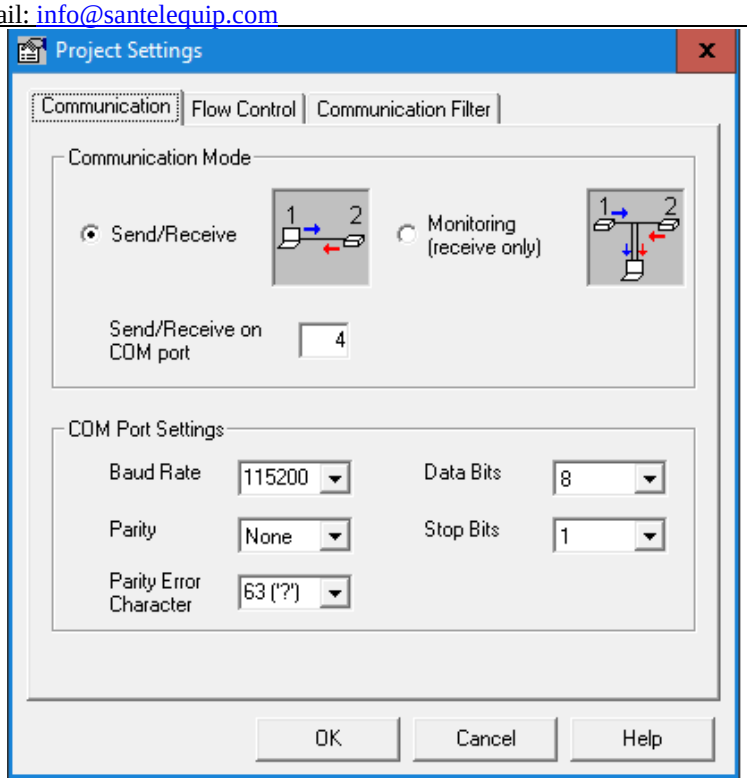
b) Check if automatically drivers get installed and COM port is shown in device manager. If USB drivers don't get automatically installed, then download drivers from below link and install it.
http://santelequip.com/download/INTERFACE%20CONVERTER/SC11%20USB%20to%20Serial/DriversSC11U.rar

c) Install Docklight software. It is freely downloadable through below website link http://santelequip.com/download/UTILITY%20SOFT/Docklight.rar

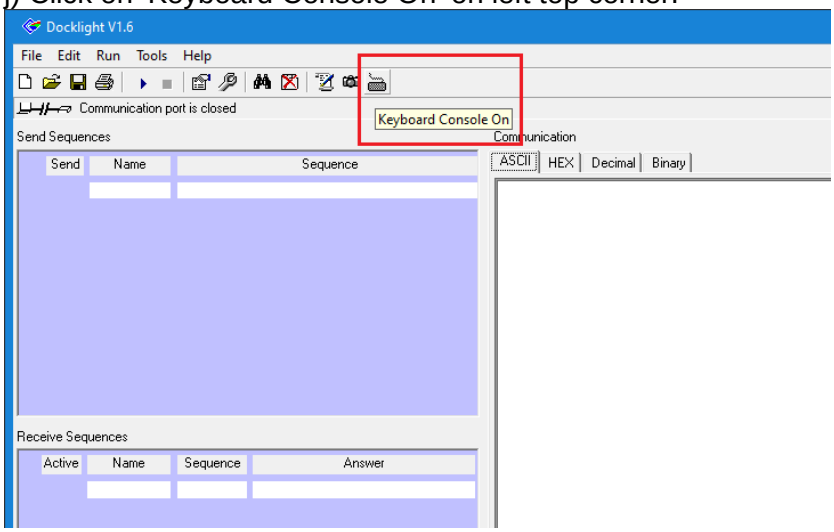
d) Open Docklight software. Open start a black project/blank script and click Continue.



e) Select COM port which was shown in device manager with baud rate baud rate 115200, 8 data bits, 1 stop bit and click OK.



j) Click on 'Keyboard Console On' on left top corner.



f) After device power on after 30 seconds, press ENTER key to go into router login. Enter login name as **admin**, then press ENTER key. Enter **password** as login password.

```
02-09-2021 17:23:59.40 [RX] - <CR>
Router login:
02-09-2021 17:24:00.58 [TX] - admin<CR><LF>

02-09-2021 17:24:01.44 [RX] - <CR>
password:
02-09-2021 17:24:02.28 [TX] - p
02-09-2021 17:24:02.35 [RX] - <BS> *
02-09-2021 17:24:02.40 [TX] - a
02-09-2021 17:24:02.44 [RX] - <BS> *
02-09-2021 17:24:02.71 [TX] - s
02-09-2021 17:24:02.79 [RX] - <BS> *
02-09-2021 17:24:02.86 [TX] - w
02-09-2021 17:24:02.90 [RX] - <BS> *
02-09-2021 17:24:03.01 [TX] - o
02-09-2021 17:24:03.04 [RX] - <BS> *
02-09-2021 17:24:03.12 [TX] - r
02-09-2021 17:24:03.15 [RX] - <BS> *
02-09-2021 17:24:03.29 [TX] - d
02-09-2021 17:24:03.33 [RX] - <BS> *
```

g) Main menu will appear on screen. Check whether current data and time is correct.

```
02-09-2021 17:25:07.49 [RX] - <CR>
**************************************************<CR>
* Product description  : GW IoTG8M                *<CR>
* Serial number        : 967295                   *<CR>
* Firmware version     : 1.17.000(12080131)       *<CR>
* System Date          : 02/09/2021               *<CR>
* System Time          : 17:25:39                 *<CR>
* Manufacturer         : SAN Telequip Pvt. Ltd.   *<CR>
* website              : www.santelequip.com      *<CR>
**************************************************<CR>
<CR>
Select Main Menu<CR>
<CR>
1 - System<CR>
2 - Serial Port<CR>
3 - Network Connection<CR>
4 - Service<CR>
5 - MQTT Settings<CR>
6 - Status<CR>
7 - Exit<CR>
```

e) To set date and time press 1, System menu will appear.

```
Enter <1-7>
02-09-2021 17:26:25.56 [TX] - 1
02-09-2021 17:26:25.63 [RX] - <CR>
Select System Menu<CR>
<CR>
1 - Location ID<CR>
2 - Set Date Time<CR>
3 - Default Settings<CR>
4 - Debug Mode<CR>
5 - System Reboot<CR>
6 - Config URL Path<CR>
7 - Config CSV Name<CR>
8 - Network Threshold<CR>
9 - Back to main menu<CR>
E - Exit<CR>
<CR>
```

Press option 2 – Set Time to set date and time if system data is not matching in above main menu screen

```
02-09-2021 17:29:10.47 [TX] - 2
02-09-2021 17:29:10.54 [RX] - <CR>
<CR>
Set Date Time <CR>
<CR>
Press ENTER to continue OR ESC to go to main menu
02-09-2021 17:29:11.22 [TX] - <CR><LF>

02-09-2021 17:29:11.26 [RX] - <CR>
Enter Year <0000-9999>:
02-09-2021 17:29:12.37 [TX] - 2021<CR><LF>

02-09-2021 17:29:13.13 [RX] - <CR>
Enter Month <01-12>:
02-09-2021 17:29:15.11 [TX] - 09<CR><LF>

02-09-2021 17:29:16.44 [RX] - <CR>
Enter Date <01-30>:
02-09-2021 17:29:17.35 [TX] - 02<CR><LF>

02-09-2021 17:29:17.75 [RX] - <CR>
Enter Hour <00-23>:
02-09-2021 17:29:19.71 [TX] - 17<CR><LF>

02-09-2021 17:29:20.37 [RX] - <CR>
Enter Minute <00-59>:
02-09-2021 17:29:22.93 [TX] - 28<CR><LF>

02-09-2021 17:29:24.23 [RX] - <CR>
Enter Second <00-59>:
02-09-2021 17:29:24.99 [TX] - 00<CR><LF>

02-09-2021 17:29:25.49 [RX] - <CR>
Save changes (Y/N) ?
02-09-2021 17:29:27.39 [TX] - y
02-09-2021 17:29:28.37 [RX] - <CR>
Changes Saved...<CR>
```

f) Set FTP URL and CSV:
To Set FTP Path select option 6 in System menu. Put the path and save it.

```
02-09-2021 17:35:51.06 [TX] - 6
02-09-2021 17:35:51.12 [RX] - <CR>
Config URL: not set<CR>
<CR>
Press ENTER to continue OR ESC to go to main menu
02-09-2021 17:35:52.65 [TX] - <CR><LF>

02-09-2021 17:35:52.70 [RX] - <CR>
Set Config URL:
02-09-2021 17:35:54.00 [TX] - http://www.santelequip.com/GSCSV/SANDemo/<CR><LF>

02-09-2021 17:36:08.36 [RX] - <CR>
Save changes (Y/N) ?
02-09-2021 17:36:09.91 [TX] - y
02-09-2021 17:36:10.89 [RX] - <CR>
Changes Saved...<CR>
```

.To set CSV name select option 7 in system menu and type CSV name & save it.

```
02-09-2021 17:38:12.74 [TX] - 7
02-09-2021 17:38:12.83 [RX] - <CR>
Config CSV Name:  not set<CR>
<CR>
Press ENTER to continue OR ESC to go to main menu
02-09-2021 17:38:13.74 [TX] - <CR><LF>

02-09-2021 17:38:13.79 [RX] - <CR>
<CR>
Set Config CSV Name:
02-09-2021 17:38:14.69 [TX] - Sandemo.csv<CR><LF>

02-09-2021 17:38:17.10 [RX] - <CR>
Save changes (Y/N) ?
02-09-2021 17:38:18.19 [TX] - y
02-09-2021 17:38:19.17 [RX] - <CR>
Changes Saved...<CR>
```

g) Set Network Threshold:
To set network threshold select option 8 from system menu, enter the threshold value and save it by pressing ‘y’ key. If gateway network range is below Network Threshold, then GPRS will not be connected. Normally network range is 0-31.Below 5 is poor. Default it is set as 5. Normally it is not required to change.

```
02-09-2021 18:19:10.22 [TX] - 8
02-09-2021 18:19:10.27 [RX] - <CR>
Network Threshold:  not set<CR>
<CR>
Press ENTER to continue OR ESC to go to main menu
02-09-2021 18:19:10.97 [TX] - <CR><LF>

02-09-2021 18:19:11.01 [RX] - <CR>
Set Network Threshold <0-15>:
02-09-2021 18:19:12.67 [TX] - 5<CR><LF>

02-09-2021 18:19:13.85 [RX] - <CR>
Save changes (Y/N) ?
02-09-2021 18:19:14.83 [TX] - y
02-09-2021 18:19:15.83 [RX] - <CR>
Changes Saved...<CR>
```

h) Set baud rate settings:

In main menu select ‘2’ to go to baud rate settings

```
02-09-2021 17:43:51.56 [TX] - 2
02-09-2021 17:43:51.61 [RX] - <CR>
Serial port settings<CR>
Baud Rate     : 19200<CR>
Data bits     : 8<CR>
Parity        : None<CR>
Stop bits     : 1<CR>
Flow Control  : OFF<CR>
<CR>
Press ENTER to continue OR ESC to go to main menu
02-09-2021 17:43:53.57 [TX] - <CR><LF>

02-09-2021 17:43:53.61 [RX] - <CR>
Set Baud Rate : <CR>
0-1200, 1-2400, 2-4800, 3-9600, 4-19200, 5-38400, 6-57600, 7-115200
02-09-2021 17:43:55.10 [TX] - 3
02-09-2021 17:43:55.17 [RX] - <CR>
Set Data bits (7,8) :
02-09-2021 17:43:56.22 [TX] - 8
02-09-2021 17:43:56.27 [RX] - <CR>
Set Parity (0-None,1-Odd,2-Even):
02-09-2021 17:43:56.78 [TX] - 0
02-09-2021 17:43:56.86 [RX] - <CR>
Set Stop bits (1,2):
02-09-2021 17:43:57.81 [TX] - 1
02-09-2021 17:43:57.88 [RX] - <CR>
Set Flow Control (0-OFF,1-ON):
02-09-2021 17:43:58.47 [TX] - 0
02-09-2021 17:43:58.53 [RX] - <CR>
Save changes (Y/N) ?
02-09-2021 17:43:59.82 [TX] - y
```

i) Network connection menu :

In Main Menu select 3 for network setting. In network setting set IP, APN name of simcard And redial interval. No need to set Access Number and User Name.

```
Enter <1-7>
23-01-2025 11:14:18.01 [TX] - 3
23-01-2025 11:14:18.04 [RX] - <CR>
Network Connection Menu<CR>
IP,APN Name        : 1,"jionet"<CR>
Access Number      : not set<CR>
User Name          : not set<CR>
Password           : not set<CR>
Redial Interval    : 9 Seconds<CR>
<CR>
Press ENTER to continue OR ESC to go to main menu
23-01-2025 11:14:20.09 [TX] - <CR><LF>

23-01-2025 11:14:20.13 [RX] - <CR>
Enter IP,APN Name (max. 30 chars. allowed. 1-IPV4, 2-IPV6, 3-IPV4V6. example
(IPV4V6):3,"jionet"):
23-01-2025 11:14:23.85 [TX] - 1,"jionet"
23-01-2025 11:14:25.79 [TX] - <CR><LF>

23-01-2025 11:14:25.82 [RX] - <CR>
Enter Access Number (max. 30 chars. allowed):
23-01-2025 11:14:26.36 [TX] - <CR><LF>

23-01-2025 11:14:26.39 [RX] - <CR>
Enter User Name (max. 30 chars. allowed):
23-01-2025 11:14:29.10 [TX] - <CR><LF>

23-01-2025 11:14:29.13 [RX] - <CR>
Enter Password (max. 30 chars. allowed):
23-01-2025 11:14:30.81 [TX] - <CR><LF>

23-01-2025 11:14:30.84 [RX] - <CR>
Enter Redial Interval <001-300>:
23-01-2025 11:14:34.44 [TX] - 9
23-01-2025 11:14:37.66 [TX] - <CR><LF>

23-01-2025 11:14:37.69 [RX] - <CR>
Save changes (Y/N) ?
23-01-2025 11:14:39.03 [TX] - y
23-01-2025 11:14:40.14 [RX] - <CR>
Changes Saved...<CR>
<CR>
```


j) To set MQTT details

If GW IoT is configured to send data in MQTT format then you will see MQTT settings in menu.

In Main Menu select 5 for MQTT setting. Set MQTT server, MQTT Port Number, Client Identifier, Username, Password, Publish Topic, Subscribe Topic, and Keep Alive Interval. Client Identifier is mandatory field. It can be generated from server or random. But it will be unique for each client. Username and Password are optional and depends on server configuration.

```
<CR>
Press ENTER to continue OR ESC to go to main menu
02-09-2021 17:47:15.49 [TX] - <CR><LF>

02-09-2021 17:47:15.53 [RX] - <CR>
Enter MQTT server (max. 50 chars. allowed):
02-09-2021 17:48:21.63 [TX] - 103.209.145.251<CR><LF>

02-09-2021 17:48:29.48 [RX] - <CR>
Enter MQTT port number (1-65535):
02-09-2021 17:48:30.52 [TX] - 1883<CR><LF>

02-09-2021 17:48:32.45 [RX] - <CR>
Enter Client Identifier (max. 25 chars. allowed):
02-09-2021 17:48:33.81 [TX] - 1234567890<CR><LF>

02-09-2021 17:48:36.61 [RX] - <CR>
Enter Username (max. 30 chars. allowed):
02-09-2021 17:48:37.73 [TX] - santelequip<CR><LF>

02-09-2021 17:48:39.80 [RX] - <CR>
Enter Password (max. 30 chars. allowed):
02-09-2021 17:48:40.69 [TX] - santelequip<CR><LF>

02-09-2021 17:48:42.72 [RX] - <CR>
Enter Publish Topic (max. 50 chars. allowed):
02-09-2021 17:49:00.76 [TX] - /santelequip/gateway1<CR><LF>

02-09-2021 17:49:11.28 [RX] - <CR>
Enter Subscribe Topic (max. 50 chars. allowed):
02-09-2021 17:49:16.40 [TX] - /Command<CR><LF>

02-09-2021 17:49:32.66 [RX] - <CR>
Enter Keep Alive Timer (0-999 Seconds):
02-09-2021 17:49:33.74 [TX] - 120<CR><LF>

02-09-2021 17:49:34.75 [RX] - <CR>
Save changes (Y/N) ?
02-09-2021 17:49:35.78 [TX] - y
```

k) To set FTP details

If GW IoT is configured to send data in FTP format then you will see FTP settings in menu menu as below.

```
Select Main Menu<CR>
<CR>
1 - System<CR>
2 - Serial Port<CR>
3 - Network Connection<CR>
4 - Service<CR>
5 - FTP  Settings<CR>
6 - Status<CR>
7 - Exit<CR>
```

In Main Menu select 5 for FTP setting. Set FTP Server, FTP Port Number, FTP Path, Username, FTP File Name (Not used- Can be skipped).

Note: Disable JSON for FTP protocol

```
04/22/22 20:25:35.13 [RX] - <CR>
Enter FTP server (max. 50 chars. allowed):
04/22/22 20:25:39.44 [TX] - www.santelequip.com<CR>

04/22/22 20:25:39.47 [RX] - <CR>
Enter FTP port number (1-65535):
04/22/22 20:25:42.35 [TX] - 21
04/22/22 20:25:43.86 [TX] - <CR><LF>

04/22/22 20:25:43.90 [RX] - <CR>
Enter FTP PATH (max. 23 chars. allowed):
04/22/22 20:26:02.88 [TX] - /Data/<CR>

04/22/22 20:26:02.90 [RX] - <CR>
Enter Username (max. 30 chars. allowed):
04/22/22 20:26:10.51 [TX] - santelequip<CR>

04/22/22 20:26:10.54 [RX] - <CR>
Enter Password (max. 30 chars. allowed):
04/22/22 20:26:11.80 [TX] - santelequip<CR>

04/22/22 20:26:11.83 [RX] - <CR>
Enter FTP File Name (max. 50 chars. allowed):
04/22/22 20:26:13.96 [TX] - IO.csv<CR>

04/22/22 20:26:13.99 [RX] - <CR>
Save changes (Y/N) ?
04/22/22 20:26:47.24 [TX] - y
04/22/22 20:26:48.22 [RX] - <CR>
Changes Saved...<CR>
```

l) Status menu shows systems current status. **'Internet Connection Status: Connected'** and **'Server/Client Status: Connected'** will be shown after cellular and IoT server connection respectively.

CSV FORMAT FOR GW IoT CONFIGURATION

The following parameters are set through CSV file stored at Santelequip's (Or customer's) FTP server. At every power on, this file is read by unit and if date and time in the CSV file is changed, then it stores new configuration into the memory.

Configuration parameter details:

1) Upload_Interval: Interval in seconds (15-10000) at which modbus data is to be uploaded on web server.
2) Slave_Response_Timeout: Timeout in milliseconds (Upto 5000) for modbus slave response.
3) User_Name and Password: User name and password of the webserver.

4) Baud_rate, Data_bits, Parity and Stop_bits: Communication parameters of modbus slaves.
5) Webserver_URL: Configuration of webserver URL name (Maximum 80 characters)
6) Modbus queries configuration:
   If 10 parameters are to be read from 40001 address of device with modbus ID 1, then configuration for modbus query is done as
   Device_ID : 1
   Data_Type : FC03 (40001 corresponds to function code 03)
   Address : 1 (Starting modbus address).
   Length : 10 (Length of modbus parameters to be read).
7) Plant_ID : Site location ID recognizable to webserver.
   Tag_Type :
   Indicates data in the format of integer
   'I' unsigned Integer 16 bit,
   'F' Float 32 bit
   'S' Swapped float 32 bit
   'L' Long 32 bit
   'M' Swapped Long 32 bit.
   'N' Long 64 bit
   'O' Swapped long 64 bit
   Signed data types:
   'P' Signed Integer16 bit
   'Q' Signed Integer 32 bit
   'R' Swapped signed integer 32 bit

8) Inputs_DeviceID: Plant ID in case of GW IoT model with IO's
9) Inputs_Variable_ID: This field is used for scaling of percentage value of analog input. Default value should be 100. If set 100, analog percentage value will be multiplied by 1.00. Similarly, this field can be used to scale the value.

10) Maxtags: This is reserved field. Default value 500.
11) Offline_Message: Default value 'N'. This field is used for only HTTP POST or GET non JSON format. If any of the modbus device is not communicating then device off message will be sent.
12) Retries: This field is for query retries. If any of the query for particular modbus device is not responding after set retries, then value for that device ID will not be updated.
13) AI_Inputs: If this field is configured then I Inputs values will be sent
14) DI_Inputs: If this field is configured then I Inputs values will be sent
15) DO_Outputs: If this field is configured then I Inputs values will be sent

Modbus mappings using CSV:

GWIoTG1M/GWIoT G8M supports configuration of 400 modbus queries.500 modbus registers can be read using gateway for monitoring of modbus devices.

Example CSV:

1) Reading 10 modbus holding registers with starting address 40001 from single device in single query and send to cloud in integer format.

Date	03-09-2021				
Time	10:30				
Upload_Interval	60	Seconds			
Slave_Response_Timeo	800	miliseconds			
User_Name	sanuser1				
Password	sanuser1				
Baud_rate	Data_bits	Parity	Stop_bits		
9600	8	None	1		
Webserver_URL					
http://www.santelequip.com					
Device_ID	Data_Type	Address	Length	Queryno	
1	FC03	1	10	Q1	
QEND					
Plant_ID	Tag_Type	Scaling_Factor			
1	I	1			
1	I	1			
1	I	1			
1	I	1			
1	I	1			
1	I	1			
1	I	1			
1	I	1			
1	I	1			
1	I	1			
TAGSEND					
Inputs_DeviceID	100				
Inputs_Variable_ID	0				
Maxtags	500				
Offline_Message	N				
Retries	2				
AI_Inputs	0				
DI_Inputs	0				

Gateway have internal buffer for 500 modbus registers as below.

Index	Value
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
499	

The responses of each modbus query in sequential will be stored in internal buffer and converted to the desired format in integer, float, swapped float, long or swapped long when sending data to the server. In above example, single query is polling 10 modbus registers. These values will be stored temporarily in the index 0 to 9 and send to the server in JSON format P1 to P10.

{"DeviceID":"1","Date":"03092021","Time":"173000","P1":"1111.0","P2":"2222.0","P3":"3333.0","P4":"4444.0","P5":"5555.0","","P6":"6666.0","P7":"7777.0","P8":"8888.0","P9":"9999.0","P10":"1234.0"}

Here Device ID will be taken from ‘Plant ID’ section of the CSV.

2) Example CSV to send float type data from single modbus device:

As float format is 32 bit, 2 modbus holding registers will combine to form a 1 float value. In below example 10 modbus registers will be polled and 5 float parameters will be sent to cloud.

Date	03-09-2021				
Time	10:30				
Upload_Interval	60	Seconds			
Slave_Response_Timeo	800	miliseconds			
User_Name	sanuser1				
Password	sanuser1				
Baud_rate	Data_bits	Parity	Stop_bits		
9600	8	None	1		
Webserver_URL					
http://www.santelequip.com					
Device_ID	Data_Type	Address	Length	Queryno	
1	FC03	1	10	Q1	
QEND					
Plant_ID	Tag_Type	Scaling_Factor			
1	F	1			
1	F	1			
1	F	1			
1	F	1			
1	F	1			
TAGSEND					
Inputs_DeviceID	100				
Inputs_Variable_ID	0				
Maxtags	500				
Offline_Message	N				
Retries	2				
AI_Inputs	0				
DI_Inputs	0				
DO_Outputs	0				

Data frame of 5 parameters will be sent to server as below.
{"DeviceID":"1","Date":"03092021","Time":"173000","P1":"1111.0","P2":"2222.0","P3":"3333.0","P4":"4444.0","P5":"5555.0"}

3) Example CSV:Polling of 2 modbus using multiple queries and send data in 5 float parameters of each modbus device

Date	03-09-2021			
Time	10:30			
Upload_Interval	60	Seconds		
Slave_Response_Timeo	800	miliseconds		
User_Name	sanuser1			
Password	sanuser1			
Baud_rate	Data_bits	Parity	Stop_bits	
9600	8	None	1	
Webserver_URL				
http://www.santelequip.com				
Device_ID	Data_Type	Address	Length	Queryno
1	FC03	1	2	Q1
1	FC03	3	2	Q2
1	FC03	5	2	Q3
1	FC03	7	2	Q4
1	FC03	9	2	Q5
2	FC03	1	2	Q6
2	FC03	3	2	Q7
2	FC03	5	2	Q8
2	FC03	7	2	Q9
2	FC03	9	2	Q10
QEND				
Plant_ID	Tag_Type	Scaling_Factor		
1	F	1		
1	F	1		
1	F	1		
1	F	1		
1	F	1		
2	F	1		
2	F	1		
2	F	1		
2	F	1		
2	F	1		
TAGSEND				
Inputs_DeviceID	100			
Inputs_Variable_ID	0			
Maxtags	500			
Offline_Message	N			
Retries	2			
AI_Inputs	0			
DI_Inputs	0			
DO_Outputs	0			

2 Data frame of 5 parameters will be sent to server at configured interval as below.
{"DeviceID":"1","Date":"03092021","Time":"173000","P1":"1111.0","P2":"2222.0","P3":"3333.0","P4":"4444.0","P5":"5555.0"}
{"DeviceID":"2","Date":"03092021","Time":"173000","P1":"1111.0","P2":"2222.0","P3":"3333.0","P4":"4444.0","P5":"5555.0"}

For GW IOT using FTP protocol following CSV parameters are added at the end of the CSV.
Device_Text: It is the name of the modbus devices connected to the gateway. Maximum 31 device names can be configured.
IO_text: Reserved field

Device_Text	
MODBUS_solis_50_25	
MODBUS_solis_50_25	
TEXTEND	
IO_Text	
IOTEXTEND	

CSV file on FTP is prepared in following format:

1) For Modbus 2 devices connected to gateway with 43 parameters configured for each device.

```
ADDRMODBUS;1;001
TypeMODBUS;Inverter_1.ini
43;1;2;3;4;5;6;7;8;9;10;11;12;13;14;15;16;17;18;19;20;21;22;23;24;25;26;27;28;29;30;31;32;33;34;35;36;37;38;39;40;41;42;43
20/04/22-11:26:46;1111;2222;3333;4444;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0
ADDRMODBUS;2;002
TypeMODBUS;Inverter_2.ini
43;1;2;3;4;5;6;7;8;9;10;11;12;13;14;15;16;17;18;19;20;21;22;23;24;25;26;27;28;29;30;31;32;33;34;35;36;37;38;39;40;41;42;43
20/04/22-11:26:46;1234;2345;3456;4567;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0
```

2) IO file is prepared as follows for 4 AI parameters.

```
TypeIO;STQ2191001_IO.ini
4;1;2;3;4
22/04/22-20:26:44;10.0;20.0;30.0;40.0
```

SMS FORMAT FOR GW IoT CONFIGURATION

To set various configuration of the device, SMS is sent to the SIM number present in the mobile. The parameters which can be configured using SMS are same which can be configured through primary interface which is USB. This is secondary interface provided for configuration alongwith USB.

a) Set APN name

To Set APN name
#123Apn#XX*

Where, XX is APN Name. Maximum length can be 20 character for APN Name. Unit will send acknowledgement SMS as following.

Command : #123Apn #www*
Acknowledgement: APN Name set to www

b) Set Configuration file path

#123Configurl#xx*

Where, XX is URL. Maximum length can be 80 characters for URL Name. Unit will send Acknowledgement SMS as following.

Command: #123Configurl#http://www.santelequip.com/GSCSV/SANDemo/*
Acknowledgement: Config url set to http://www.santelequip.com/GSCSV/SANDemo

c) Set configuration CSV name

#123Configcsv#xx*

Where, XX is csv name. Maximum length can be 20 characters for URL Name. Unit will send acknowledgement SMS as following.

Command : #123Configcsv#SANDemo_01.csv*
Acknowledgement : Config csv set to SANDemo_01.csv

d) MQTT settings commands

1) **Set MQTT server IP (Maximum 50 characters)**
   #123Server#103.209.145.251*

2) **Set MQTT server port (1-65535)**
   #123Port#1883*

3) **Set MQTT server username (Maximum 30 characters)**
   #123User#santelequip*

4) **Set MQTT server password (Maximum 35 characters)**
   #123Password#santelequip@123*

5) **Set MQTT client identifier (Maximum 25 characters)**

#123Clientid#1234567890*

6) Set MQTT publish topic (Maximum 45 characters)
#123Pubtopic#/test/topic*

7) Set MQTT subscribe topic (Maximum 45 characters)
#123Subtopic#/test/topic*

8) Set MQTT keep alive timer in seconds (0-999 Seconds)
#123Keepalive#120*

e) FTP IoT protocol settings commands

1) #123Server#www.santelequip.com*

2) #123Port#21*

3) #123Ftppath#/GWIoTG8M*

4) #123User#santelequip*

5) #123Password#santelequip*

6) #123Iocsv#IO.csv*

e) Authentication numbers
User can enable authentication numbers. Once authentication numbers are set, only these numbers can change settings through SMS. By default any number can change send SMS for settings

#123A#+919764027070#+918390069393*'

h) Set serial number
#123Serialno#2091001*
Once serial number is configured, data frame will be added with serial number.

g) Read network settings #123RN*

This message return, apn name, FTP CSV path and CSV name as below:

APN:
airtelgprs.com

URL:
http://www.santelequip.com/GSCSV/

CSV:
Sandemo.csv

h) Read device status #123RS*

This message returns signal strength, firmware version, current date and time and GPRS & MQTT connection status. Sent SMS from GW IoT G1M/ GW IoT G8M as below:

GWIoTG8M

Signal strength 25

FW: 1.17.000(12080131)

03/09/2021 17:30:00

Internet Connected

i) Read MQTT server settings:

1) Read server name, port, user and password #123RServer1*

Server:
103.209.145.251

User:
santelequip

Pwd:
santelequip

2) Read client id, publish topic, subscribe topic and keep alive timer #123RServer2*

CL:
1234567890

PubT:
/santelequip/gateway1

SubT:
/Command

KeepA:
120

f) Reboot through SMS

Command : #123Reboot*
Acknowledgement : Reboot Message is received

g) Reboot and clear logs through SMS

Command : #123Rebootl*
Acknowledgement : Reboot Message is received
Logs cleared

h) Read authentication numbers

Command : #123RA*
Acknowledgement : Authentication numbers are
+919764027070
+918390069393

CONNECTOR DETAILS

a) RTU interface:

RTU has RS485 interface using 3 Pin Houder.

PIN no.	PIN details
1	D+ (RS485)
2	D- (RS485)
3	GND

b) Power connector:

GW IoT works on +24V DC supply using 3 Pin Houder.

PIN no.	PIN details
1	+Terminal of 24V DC IN
2	-Terminal of 24V DC IN
3	GND

LED INDICATIONS

LED Name	Details	
Power	ON	Unit is powered on
	LED 1 Blinking &	Poor range

Range	LED2 OFF	
	LED 1 ON & LED2 OFF	Good range
	LED 1 ON & LED2 ON	Strong range
GPRS status	Fast blinking	Unit is in GPRS initialisation mode
	Slow blinking	Unit is connecting to GPRS/ Uploading data on webserver
	Off	Idle mode-Unit is connected to GPRS but not uploading data